June 4, 1940. I. H. GILBERTSON 2,203,567

MACHINE FOR POLISHING ROLLERS, SUCH AS USED IN PRINTING MACHINES

Filed May 9, 1938 3 Sheets-Sheet 1

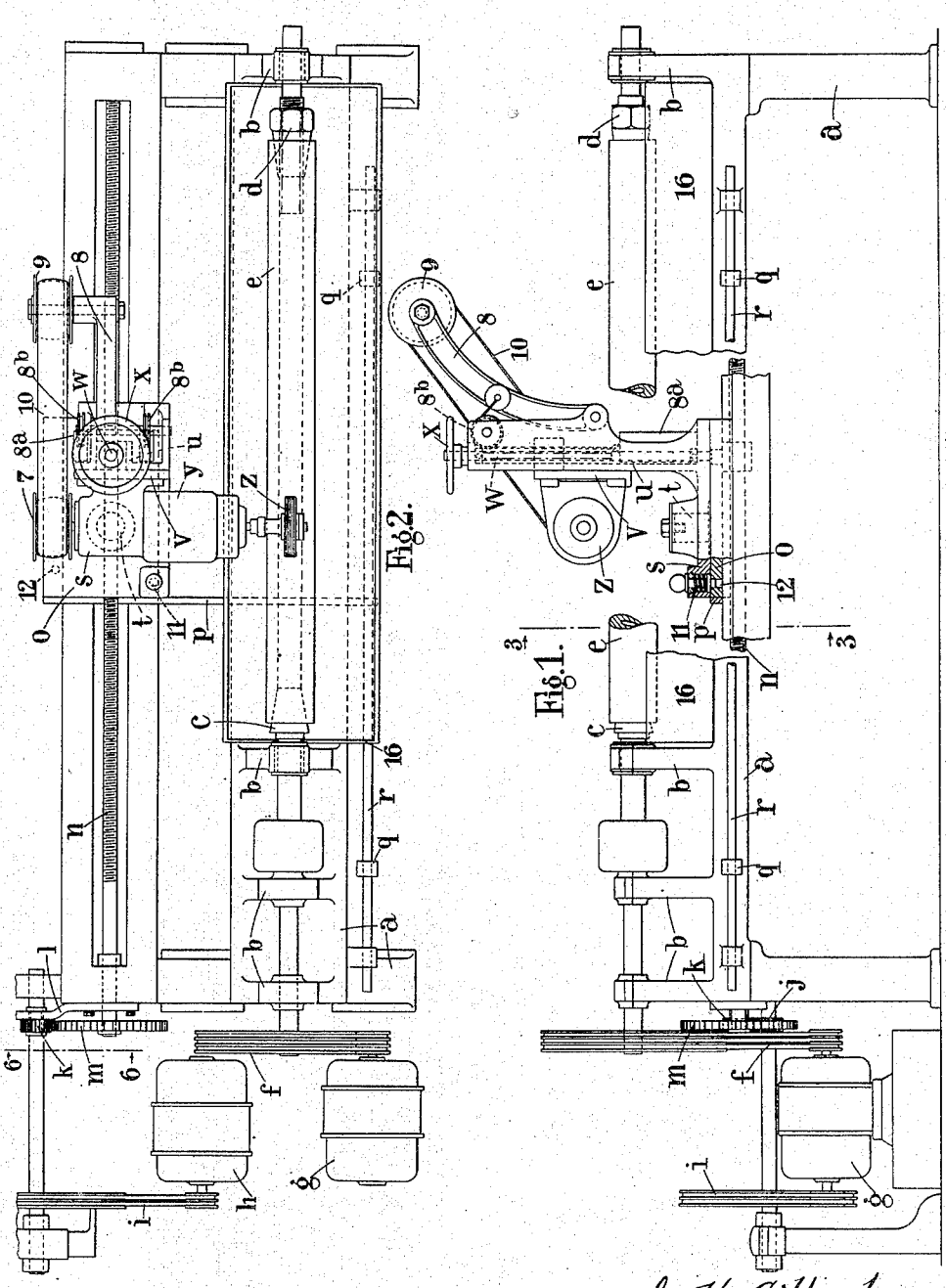


Fig. 2.

Fig. 1.

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Filed May 9, 1938 3 Sheets-Sheet 2

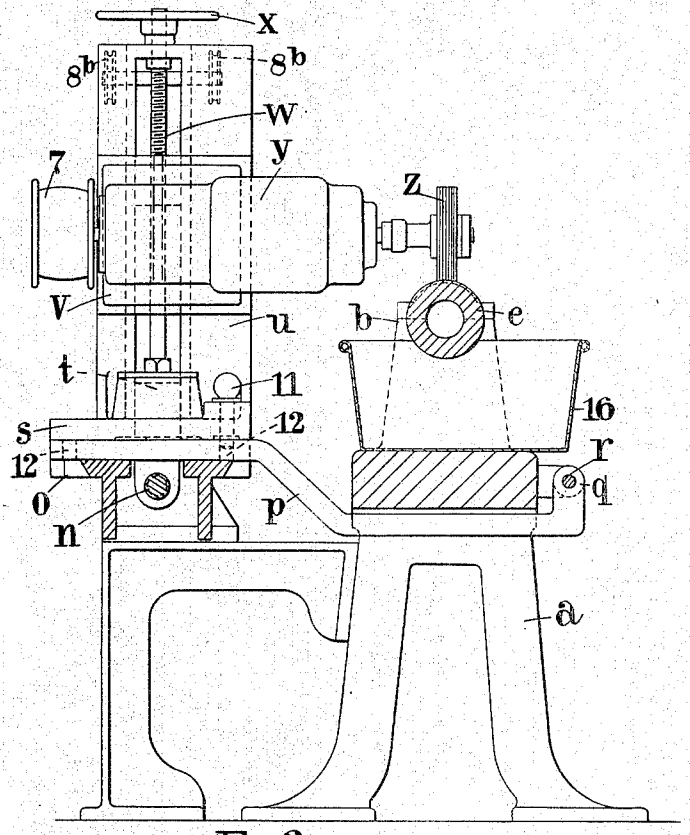


Fig. 3.

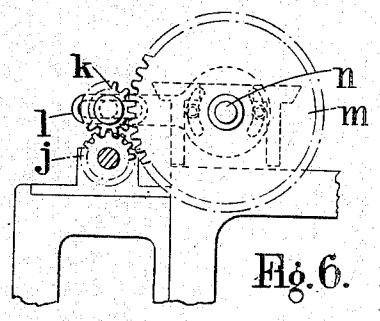


Fig. 6.

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MACHINE FOR POLISHING ROLLERS, SUCH AS USED IN PRINTING MACHINES

Filed May 9, 1938 3 Sheets-Sheet 3

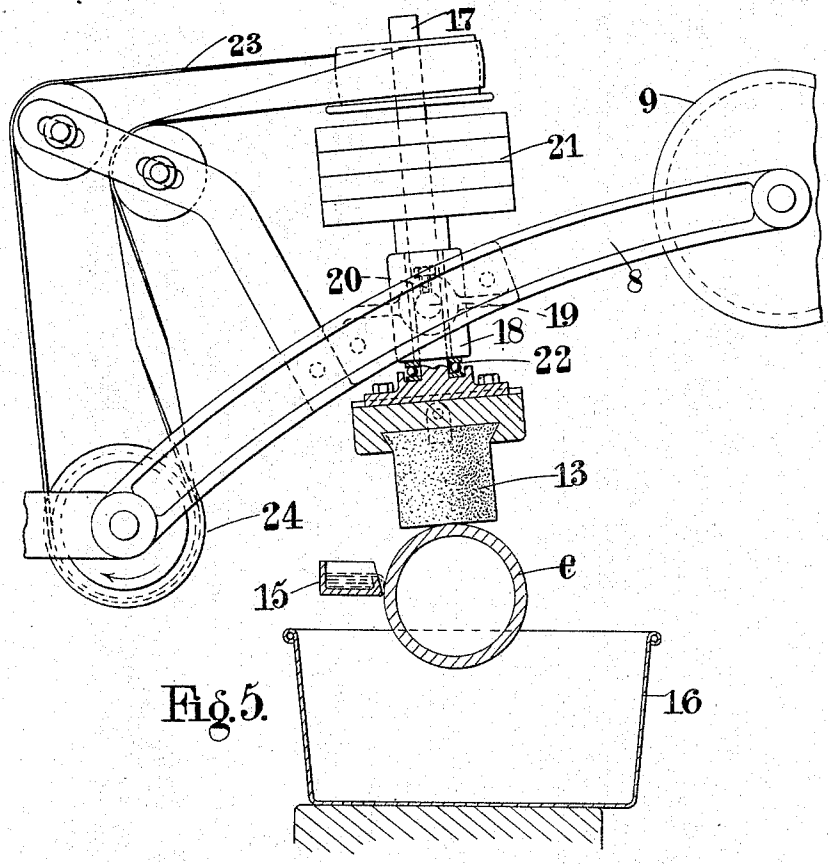


Fig. 5.

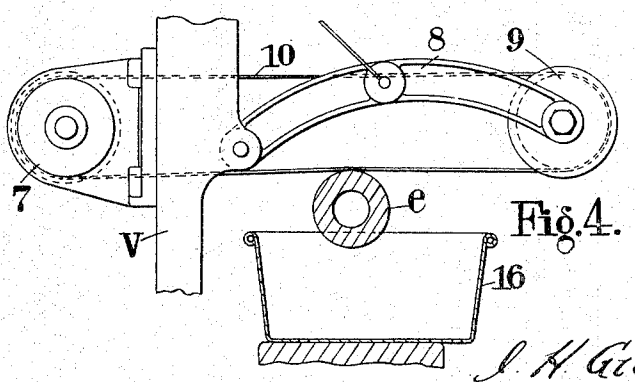


Fig. 4.

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UNITED STATES PATENT OFFICE

2,203,567

MACHINE FOR POLISHING ROLLERS, SUCH AS USED IN PRINTING MACHINES

Isaac Harold Gilbertson, Middleton, England

Application May 9, 1938, Serial No. 206,936

In Great Britain May 18, 1937

1 Claim. (Cl. 51—3)

This invention relates to machines for polishing and buffing hollow rollers, such as the printing rollers of fabric and paper printing machines, and has for its object to provide a simple and convenient means by which the two operations of polishing and buffing can be readily performed in the machine without altering the setting of the roller being operated upon.

A machine in accordance with this invention comprises means for polishing and buffing hollow rollers, such as printing rollers, comprising means for supporting and rotating the roller to be polished and buffed, a slide reciprocated in a path parallel with the axis of the roller, and a swivelling head mounted upon the said slide, a column upon the said swivelling head and a counterweighted slide movable vertically along the said column and carrying an electric motor driving a buffing wheel at one end of its spindle and a belt pulley at the other end of a spindle, a polishing belt being placeable around this pulley and around a further pulley upon an arm pivoted to the swivelling head for pivotal movement in a vertical plane.

In one position of the head, the buffing wheel engages the roller with its axis at right angles to the roller and is traversed back and forth from end to end of the roller. In another position of the head at right angles to the buffing position, the polishing belt which extends between the two pulleys before referred to moves in contact with the roller at right angles to its axis and traverses from end to end of the roller. A polishing stone may be mounted upon and below the arm before referred to and used to finish the roller, the polishing belt being used simultaneously or removed during "stoning."

Referring to the accompanying explanatory drawings—

Figure 1 shows one convenient construction of a machine in accordance with the invention in front elevation, part of the machine being broken away to show other parts, during the buffing operation.

Figure 2 shows the machine in plan,

Figure 3 is a cross-sectional elevation on the line 3—3 of Figure 1.

Figures 4 and 5 are detail views showing the arrangements for polishing and stoning respectively, Figure 5 showing a modified form of the machine shown in the other figures.

Figure 6 is a sectional elevation on the line 6—6 of Figure 2.

A machine frame *a* carries supports *b* for the headstock *c* and tailstock *d* whereon the hollow printing roller *e* which is to be treated is mounted. The headstock and roller are rotated by a rope drive *f* from the electric motor *g*.

A further motor *h* through a rope drive *i*, pinion *j*, idler *k* adjustably mounted on a pivotally movable arm *l* and gear wheel *m* drives a feed screw *n*. By replacing the pinion *j* on gear wheel *m* by others of a different diameter and adjusting the position of the idler *k*, the rate of rotation of the feed screw *n* can be varied. The feed-screw *n* traverses a slide *o* along the length of the roller *e*. The slide *o* carries an arm *p* which engages collars *q* adjustably mounted on a stationary rod *r* at the ends of the traverse of the slide *o* and actuates reversing switches (not shown) controlling the motor *h*, thereby reversing the direction of movement of the slide.

Upon the slide *o* is mounted a swivelling head *s* which can turn about the pivot *t* and carries a column *u* whereon is a vertically movable slide *v* which can be adjusted in height by a lead screw *w* turned by a handwheel *x*.

Upon the vertically movable slide *v* is mounted an electric motor *y* driving a buffing wheel *z*, mounted upon an extension of the motor spindle and formed of fabric layers, which engages the surface of the printing roller *e* and buffs it as it is traversed from end to end along the rotating printing roller. The height of the slide *v* is adjusted to suit the diameter of the roller *e*.

Upon the other end of the spindle of the motor *y* is a belt pulley 7. There is an arm 8 pivoted to the slide *v* for movement in a vertical plane and partially supported by a counterweight 8ª attached to the arm 8 by cords running over pulleys 8ᵇ. This arm 8 carries a further belt pulley 9. A polishing belt 10 can be placed over the pulleys 7 and 9. On turning the swivelling head *s* through 90° from the Figure 1 position and lowering the pivoted arm 8, the polishing belt 10 engages the printing roller *e* as shown in Figure 4 and polishes it. A spring-pressed plunger 11 engages in one or the other of two holes 12 in the slide *q* and holds the swivelling head *s* in its desired position.

It will be noted that the polishing belt surface in Figure 4 is moving at right angles to the axis of the printing roller *e* and at right angles to the direction of movement of the surface of the buffing wheel *z* in Figure 1.

Raising the pivoted arm 8 slackens the polishing belt 10 and enables it to be readily removed from the pulleys 7 and 9.

If it is desired to stone the printing roller

the modified form of the machine shown in Figure 5 may be employed. It will be seen that there is a rotary polishing stone 13 mounted upon and below the pivoted arm 8. The shaft 17 whereon the stone 13 is mounted runs in a sleeve 18 mounted in trunnions 19, so that the stone may be set at the correct angles to the roller axis and clamped at this angle by the set-screw 20. Loose weights 21 rest upon the top of the sleeve 18 and apply the correct pressure for stoning through the thrust bearing 22. The shaft 17 is driven by a belt 23 from the pulley 24, which in turn is driven from the motor *y*.

The stone may be stationary instead of rotary if desired.

An overflow trough 15 supplies lubricant during the stoning operation, the lubricant and the particles removed from the roller surface being received in the large blower trough 16.

What I claim is:

A machine for polishing and buffing printing and other hollow rollers comprising means for supporting and rotating the roller about a horizontal axis, a slide movable parallel with the axis of the roller, means to reciprocate said slide, a head mounted to swivel about a vertical axis upon said slide, a column upon the said swivelling head, a slide vertically movable upon said column, means to move said slide along said column and to retain it in desired position thereon, an electric motor upon said column slide, a buffing wheel at one end of and driven by said motor, a belt pulley at the other end of and driven by said motor, a counterweighted arm pivoted to said column slide for movement in a vertical plane, a belt pulley at the free end of said arm, and an endless polishing belt around the two said belt pulleys.

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